

Table ____

Pollution Prevention Opportunities for the Radiator Repair Industry

The keys are to minimize drag-in and drag-out to and from the caustic boil-out tank, and to recycle water from the test tank as rinse water in the flushing booth and finally as make-up water in the caustic boil-out tank. Zero discharge to the sewer is possible, but sludge needs be removed from the tanks regularly.

<u>Y/N</u>	<u>Opportunities</u>	<u>Comments</u>
I. Good Operating Practices		
—	Remove as much oil as possible from oil cooler using compressed air	To minimize drag-in to boil-out tank
—	Remove and recycle antifreeze, if any	To minimize drag-in
—	Provide hang bars over caustic boil-out tank	To allow convenient draining
—	Provide drain board between tanks	To minimize spillage to floor
—	Blow out residual caustic solution to tank using compressed air	To minimize drag-out to flushing booth
—	Pre-rinse radiator over boil-out tank using fog spray	To minimize drag-out
—	Maintain and monitor boil-out tank	To minimize need for tank dump
—	Upon dumping of tank, remove the solids, reuse the liquid and reconstitute the bath	To minimize volume of waste upon bath dumping
—	No soldering over the test tank	To prevent zinc and lead contamination of test water
—	Filter solids and reuse test tank water when bath is cloudy	To minimize tank dump
—	Secondary containment for boil-out tank and sludge storage area	To prevent spills and leaks
II. Process Modification		
—	Reuse test tank water in flushing booth	To minimize water and metal discharge to sewer
—	Reuse flushing booth rinses for boil-out tank make-up	To minimize discharge to sewer
—	Use higher pressure and lower water flow in flushing booth	To minimize water use and need for disposal
—	Use smaller process tanks with ultrasonic cleaning	To reduce volume of waste generation

— Use smaller test tanks for
efficient operation

To minimize volume of
wastewater

III. Material Substitution

— Reduce use of cleaner or flux
containing metal chelating
compounds

To minimize interference with
wastewater treatment

— Use a low zinc flux

To reduce zinc level in sludge

(Radiator, Manual, 10/90, Lo)



Kentucky Pollution Prevention Center

22 for Automotive Repair Shops

Home

About

Publications

Materials Exchange

EMS/ISO 14001

**Environmental
Justice**

**Kentucky Wood
Waste Alliance**

Spotlight

Search

Sitemap

Automotive repair shops produce many types of waste -- some hazardous, some not necessarily hazardous but still potentially damaging to the environment if not handled properly, and all requiring proper treatment and/or disposal at significant cost to the business. A list of the types of waste that the shop owner or manager must contend with would include:

- ◆ solvents (paints and paint thinners)
- ◆ antifreeze
- ◆ scrap metal
- ◆ batteries and other auto parts
- ◆ oils and oil filters
- ◆ fuels of various types
- ◆ acids and alkalis (contaminated rags and towels)

Whatever the nature and characteristics of the waste may be, it all has one thing in common: All waste represents loss of resources and loss of money.

The most effective way to minimize these losses is to avoid producing the waste in the first place. This tip sheet can assist you reducing your losses while helping improve the environment.

Businesses throughout the country have implemented waste reduction programs and found that there are many benefits to be gained from such an approach to the management of resources. Reducing the amount of waste your business generates can help you:

- ◆ reduce operating costs
- ◆ reduce waste disposal costs
- ◆ reduce long-term liability
- ◆ help sustain environmental quality
- ◆ improve workplace safety and health
- ◆ project a positive public image



Table of Contents

Use the following bookmarks to help you find useful information regarding pollution prevention opportunities and waste reduction.

Getting Started
 Establishing Good Housekeeping Practices
 Solvents -- Reducing, Reusing, and Recycling
 Applying Pollution Prevention to Other Shop Wastes
 Following up
 Sources of Additional Help
 KPPC's On-Site Technical Assistance

Getting Started

Getting off to a good start is crucial to the success of any endeavor. Here are some important things to consider in undertaking a waste reduction program:

- ◆ Make a commitment to pollution prevention. This commitment must start at the top, with the owner or manager of the shop, and extend to every employee.
- ◆ Involve the employees in designing and implementing pollution prevention measures.
- ◆ Provide training in waste reduction techniques and practices. Don't let this be a one-shot effort -- periodic "refresher" courses will help to increase employees awareness of the importance of waste reduction.
- ◆ Establish incentives to encourage workers to use waste reduction techniques and to suggest changes, in design or operating procedures that would further reduce waste generation.
- ◆ Assess the shop's waste. Identify sources, types, and amounts of waste being produced. This will make it easier to pinpoint areas where waste reduction techniques can be applied and to measure the success of your efforts.

DID YOU KNOW?

About 2.1 tons of used crankcase oil ends up in our rivers and streams every year. A single quart of motor oil can pollute 250,000-gallons of drinking water.

Establishing Good Housekeeping Practices

Improving a business's housekeeping practices is often the easiest and least expensive way to reduce waste. Good housekeeping includes good inventory control and efficient operating procedures. Here are some housekeeping tips:

- ◆ Keep storage and work areas clean and well organized, and keep all containers properly labeled.
- ◆ Inspect materials upon delivery, and immediately return unacceptable materials to the supplier.
- ◆ Keep accurate records of material usage so that you can measure reductions in use. Mark the purchase date on each container and adopt a "first in, first out" policy so that older materials are used up before new ones are opened; assign someone to distribute and keep track of the materials.

- ◆ Implement a preventative maintenance program. Reduction in environmental impact from spills, as well as savings from reduced downtime and avoidance of raw material losses, can be dramatic.
- ◆ Use durable, resealable containers and keep them covered to prevent evaporation and spillage.
- ◆ Keep waste streams separate to increase their potential for reuse, recycling, or treatment. Don't allow non-hazardous materials to become contaminated with hazardous materials, as this will result in all of the waste needing to be treated as hazardous waste.
- ◆ Install flow meters, flow control devices, and shut-off nozzles to cut down on water usage.

Solvents -- Reducing, Reusing and Recycling

Auto repair shops typically use solvents in a variety of operations, including parts cleaning, degreasing, and painting. Many of these solvents, may be classified as hazardous waste, and may therefore require expensive treatment and/or disposal. A number of pollution prevention strategies can be used to reduce both the toxicity and the quantity of spent solvents requiring disposal:

- ◆ Try to find one multi-purpose solvent that can serve a variety of uses, rather than having a different solvent for each operation. This will minimize the number of waste streams and increase the recycling potential of the spent solvent.
- ◆ Substitute less hazardous alternatives for solvent cleaners. Consider water-based cleaners or water-soluble cutting fluids, or install a pressure wash system if feasible.
- ◆ Extend the life of solvent baths. Some ways to do this are by pre-cleaning parts with rags or a wire brush before placing them in the bath (then having the rags cleaned for reuse), by using old solvent as a pre-soak to remove most of the dirt or grease before introducing the parts into the fresh bath, by cleaning out tank sludge regularly, and by filtering solvents baths to remove grit and water.
- ◆ Minimize the amount of cleaning solvent lost during drainage of cleaned parts. Remove parts from the bath slowly to prevent spillage; install drip trays or racks near the bath for draining cleaned parts; return the drainage to the bath.
- ◆ Eliminate all unnecessary solvent tanks and keep lids on all parts washing tanks and containers to reduce evaporative losses. Up to 50% of the solvent can be lost through evaporation.
- ◆ Use on-site recovery techniques to make solvents reusable. Consider leasing or purchasing solvent recovery equipment (list of solvent recovery manufacturers).

- ◆ Common methods of recovery are:

Decanting -- drawing off liquids from the settled sludge. Alternatively, the bottom sludge may be drained out.

Filtration -- passing solvent through a porous medium to remove the solids.

Distillation -- separating liquids from each other by taking advantage of their different boiling points.

If the solvents cannot be made reusable, try to find a way to recycle them. One possibility for accomplishing this is to purchase solvents from a company that will pick up and recycle the spent solvent (list of solvent recyclers).

Applying Pollution Prevention to Other Shop Wastes

Oils

- ◆ Use drip pans to catch lube oils for reuse. Handle oils carefully to avoid spillage. Contract with a reputable recycler to collect your used oil (list of oil and solvent recyclers and oil and oil filter recyclers).
- ◆ Increase lube oil performance by using high-grade oils and replenishing base stock with additive packages.

Caustic Cleaners

- ◆ Substitute detergent-based solution for caustic cleaning solution.
- ◆ Clean parts mechanically, rather than chemically, whenever possible.

Other

- ◆ Use paints with higher solids content, or water-based paints with no solvent, whenever possible.
- ◆ Collect all scrap metal and take it to a metal recycler (list of scrap metal recyclers).
- ◆ Make sure all Freon is properly handled and recycled. Even small amounts of Freon pose a serious environmental threat because of their tremendous potential for destruction of stratospheric ozone.
- ◆ Arrange to have waste antifreeze picked up by a recycler.
- ◆ Use cloth towels that can be cleaned and reused.
- ◆ Collect brake fluid in a separate, marked, closed container and identify a waste hauler that will recycle it (because brake fluid is not crude-based, it should not be recycled with used oil).

Following Up

As long as wastes are being produced, there is the potential for waste reduction. Less-polluting materials, equipment, and procedures are constantly being developed, so that wastes that are difficult or costly to control today may be easily eliminated tomorrow. Stay alert for such developments.

When buying new equipment, look for equipment that will minimize both the amount of toxic materials used and the amount of waste produced. Design for pollution prevention.

Reassess the shop's operations and waste handling practices periodically. A successful program requires diligence so as to avoid the temptation of slipping back into old more wasteful ways of doing things and to identify additional waste reduction possibilities.

Publicize the shop's commitment to waste reduction. Customers will feel good about doing business with a company that is environmentally responsible.



Sources of Additional Help

This Fact Sheet is not intended to be a comprehensive list of all of the techniques that could be used to reduce waste in an automobile repair shop. As each shop is unique, with its own combination of wastes and its own individual way of doing business, so will each waste reduction program be different from all others. A number of resources are available to help you develop, and implement a program that will meet your shop's individual needs:

The Kentucky Industrial Waste Exchange (KIME) may be able to help you find companies that can use your wastes.

KPPC's Vendor Manufacturers / Recyclers List

A listing of vendor manufacturers and recyclers within Kentucky and other areas. Click [here](#) to obtain our most current listing compiled by the Kentucky Pollution Prevention Center.



KPPC's On-Site Technical Assistance

The most important service KPPC provides is our on-site visits to assist clients with problem wastestreams. KPPC's services are free, nonregulatory and totally confidential. Any business within the Commonwealth, no matter how large or small, can benefit from KPPC's free technical assistance. Click [here](#) to learn more!

Internet Resources for Vehicle Maintenance

SAGE (Solvent Alternatives Guide) (<http://www.clean.rti.org>)

This is a comprehensive guide designed to provide pollution prevention information on solvent and process alternatives for parts cleaning and degreasing.

EnviroSense's Solvent Substitution Data Systems (<http://es.epa.gov/ssds/ssds.html>)

This contains alternative solvents as well as recovery operations.

Small Business Home Page (<http://www.smallbiz-enviroweb.org/pubsector.asp>)

Choose to search "automotive" for the Industry Sector/Environmental Topic for many different publications and fact sheets about automotive repair.

CCAR (Coordinating Committee for Automotive Repair)-GreenLink® (<http://www.ccar-greenlink.org>)

The CCAR is the National Automotive Environmental Compliance Assistance Center that can be reached at 1-888-GRN-LINK (476-5465). This is a coalition of industry, education and government that offers environmental compliance information for the automotive industry.

Green Truck (<http://www.greentruck.com/prevention/index.html>)

Green Truck is a service of the American Trucking Associations and the Transportation Environmental Resource Center that provides pollution prevention information for trucking and vehicle maintenance facilities.

Washington State Department of Ecology, Hazardous Waste and Toxics Reduction Program,
Department of Ecology Publications; P.O. Box 47600; Olympia, WA 98504-7600

- **Managing Hazardous Waste: A Guide for Automotive Repair Shops**
(<http://www.ecy.wa.gov/pubs/92br12.htm/>), Publication #92-BR-12, February 1999.
- **Managing Hazardous Waste: A Guide for Auto Body Shops**
(<http://www.ecy.wa.gov/pubs/92br16.htm/>), Publication #92-BR-16, February 1999.
- **Managing Hazardous Waste: A Guide for Automotive Machine Shops**
(<http://www.ecy.wa.gov/pubs/92br11.pdf>), Publication #92-BR-11, February 1999.
- **Automotive Body Repair Environmental Competency**
(<http://www.ecy.wa.gov/pubs/97409.pdf>), Publication #97-409, December 1996.

Keep Your Shop In Tune: A Best Management Practices Guide for Automotive Industries (<http://www.ecobiz.org/pdf/Keep-Shop.pdf>)

August 1998, published by Oregon's Pollution Prevention Outreach Team

Guides to Pollution Prevention: The Automotive Repair Industry, United States Environmental Protection Agency, Office of Research and Development, October 1991, EPA/625/7/91/013. Search for "Guides to Pollution Prevention: The Automotive Repair Industry" at (<http://www.epa.gov/ttbnrmrl>) to order.

RCRA In Focus: Vehicle Maintenance (<http://www.p2pays.org/ref/12/11806.pdf>)
July 1999, discusses RCRA regulations and waste minimization.

EPA Guides to Pollution Prevention: The Automotive Repair Industry
(<http://www.p2pays.org/ref/02/01042.pdf>)

Vehicle Maintenance Pollution Prevention (<http://www.iwrc.org/pubs/vmm.pdf>)
This is published by the University of Northern Iowa Small Business Pollution Prevention Center.

Pitstops Manual: Best Management Practices For Automobile Service Facilities
(<http://www.des.state.nh.us/nhppp/pitstops.pdf>)
This is published by the New Hampshire Pollution Prevention Program and the New Hampshire Department of Environmental Services.

Automotive Repair and The Environment (<http://www.p2pays.org/ref/05/04849.pdf>)
This is published by Georgia Tech Research Institute Environmental Management Branch for EPA, includes information on properly managing automobile repair wastes.

A Sustainability Vision for the Automotive Services Industry: Using The Natural Step Framework to Develop a Plan Toward Sustainability for Automotive Mechanical and Collision Repair Shops (<http://www.pprc.org/pprc/pubs/deqauto.pdf>)
This report, commissioned by the Oregon Department of Environmental Quality, uses the Natural Step framework to develop a plan toward sustainability for automotive mechanical and collision repair shops.

A Pollution Prevention Guide for Automotive Repair Shops
(<http://www.dnrec.state.de.us/del-auto.htm>)
This Delaware Department of Natural Resources and Environmental Control guide addresses pollution prevention and best management practices for automotive repair shop wastes.

Auto Repair Trade Associations

Automatic Transmission Rebuilders Association (<http://www.atra-gears.com>)
Automotive Industry Action Group (<http://www.aiag.org>)
The Automotive Parts and Accessories Association (<http://www.apaa.org>)
Automotive Recyclers Association (<http://www.autorecyc.org>)
Automotive Service Association (<http://www.asashop.org>)
Engine Rebuilders Association (<http://www.aera.org/main.htm>)